

National Series N135 Specifications

November, 1989

General

This specification shall cover a hydraulically actuated truck mounted articulating crane. This crane shall be capable of lifting the rated capacities at the radii and boom lengths set forth below under "Capacities" without creating a force greater than 85% of that required to overturn the truck when the outriggers are set properly and the truck on firm, level ground provided that the crane shall be mounted on a truck having a minimum empty weight including chassis and platform body of 11,900 lbs. with a distance from the back of the cab to the center of the rear axle of not less than 144 inches and a distance from the back of the cab to the center of the front axle of not less than 78 inches with a front axle of a rated capacity of not less than 12,000 lbs., rear axle 18,000 lbs. Each main frame channel of the truck frame shall have a minimum section modulus of 26 inch cube with 50,000 psi yield steel or 15.9 inch cube section modulus with 110,000 psi yield steel, or be reinforced to reach these requirements. The crane hydraulic oil supply shall be provided by one hydraulic pump, driven by a power takeoff having an output ratio of 70-85% of engine speed, mounted on a truck transmission. All components shall be American made and assembled.

Construction

The crane weight, including outriggers, must not exceed 6,250 lbs. and must comply with ASME/ANSI B30.22 1987 Standard, AWS and OSHA Standards. The manufacturer may be required to submit copies of the test data confirming this unit complies with ANSI/SAE J1063.

Boom

Boom shall have a horizontal reach of not less than 27'10" hydraulically and not less than 41' with manual extensions. The boom shall have the ability of being hydraulically extended to a maximum vertical reach of 36' and 49' with the manual extensions above truck frame. All manual extensions must be capable of telescoping back into the hydraulic extensions when not in use.

Capacities

Crane rating—137,750 ft/lbs.

Capacities shall be:

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| | | | |
|--------|-------------|--------|------------|
| 7' | 19,000 lbs. | 27'10" | 4,750 lbs. |
| 9' | 15,000 lbs. | 34'5" | 3,650 lbs. |
| 15'10" | 8,700 lbs. | 41' | 3,000 lbs. |
| 21'11" | 6,150 lbs. | | |

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|--------|-------------|--------|------------|
| 7' | 19,000 lbs. | 21'11" | 6,150 lbs. |
| 9' | 15,000 lbs. | 27'10" | 4,750 lbs. |
| 15'10" | 8,700 lbs. | | |

Space Requirement

Crane shall be capable of stowing behind cab of truck in no more than 40 inches of mounting space.

Crane Height

Height of crane above mounting surface shall not exceed 93 inches.

Outriggers

Outriggers shall be fully hydraulic up and down with no less than 24½ inches of stroke. The outrigger legs shall be hydraulically extendable outward to a width of no less than 236 inches. The vertical outrigger cylinders shall have pilot operated check valves to preclude collapse in case of hydraulic line failure. The vertical cylinders shall be fully enclosed to protect the shafts from dirt and foreign objects. Pads must have a minimum area of 112 square inches each.

Controls

Crane shall have horizontal, waist level controls on each side of machine with an external engine throttle on one side. Control valve shall have open center, four way spring centered spools with each valve spool controlling a separate function of the crane. Valve shall be equipped with a main system relief section to prevent damage to pump, cylinder and hoses.

The operating pressure shall not exceed 3,100 psi.

Cylinder Protection

All boom cylinders shall be double acting and have pilot operated holding valves to prevent collapse in case of hydraulic line failure and be equipped with internal safety relief valves to protect against overload.

Rotation

The rotation system shall consist of a double-reduction planetary gear box with a spring applied hydraulically released brake. The brake shall have the ability to slip through to reduce impact loads on the rotation system. The drive gear shall maintain full tooth contact with the rotation gear without the necessity of adjustment. The mast and main frame mounting surface for the bearing shall be machined after welding. Rotation gear is to be attached to the crane frame by use of high strength bolts for ease of service. A full circle bolt pattern between the main frame, rotation bearing and mast shall be used for equal load distribution. Rotation shall be 410 degree non-continuous with cushioned rotation-stop.

SAE Components

The crane must have all standard SAE type ports, hoses, fittings, etc. No other will be acceptable.

Bearings

The crane shall have large diameter composite bearings at all boom pivot points. The pins shall be extra smooth, rust resistant, chrome plated to give long bearing life with minimal maintenance.

Oil Tank

The crane shall have a detachable oil tank of no less than 22 gallons capacity with a sight gauge and 10 micron replaceable, spin on type return line filter, diffuser and magnetic plug.

Options

This crane shall be designed to accept as a minimum the following equipment which can be added at any time during the life of the crane.

A. Crane shall have two extra valve sections with controls on both sides of the machine to power additional hydraulic attachments to the end of the boom.

B. Remote Controls

Crane shall be equipped with a hand-held remote control system having the following functions:

- | | |
|------------------------|-------------|
| 1. Main | raise/lower |
| 2. Knuckleboom section | raise/lower |
| 3. Telescope | out/in |
| 4. Rotation | left/right |
| 5. Winch | raise/lower |

This control system will also have a truck engine start/stop function as well as priority control valve operated by finger-trigger on the remote control handle allowing regulation of oil flow which controls speed movement of the crane functions with fine metering characteristics.

C. Hydraulic Winch

This unit shall be equipped with a boom mounted hydraulic winch, with 4,400 lbs. full drum line pull and 93 fpm line speed—5,300 lbs. bare drum pull and 76 fpm line speed. Winch and easy single-pin boom tip sheave can be stowed without removing. Includes winch control and anti-two-block feature to prevent cable damage when winching up or extending the boom without paying out the winch cable.

D. Personnel Basket

Unit shall be equipped with a one-man light-weight fiberglass basket having a capacity of 300 lbs. Bucket dimensions 22" x 22" x 42" height equipped with gravity hung basket and a mechanical swing lock and shall include a personnel safety belt and lanyard, and easy on/off detachable mounting system of the pin-on type. **Working height** of this system shall be a minimum of 47' above the truck frame. Horizontal reach shall be a minimum of 41'.